

## SALES SERVICE BULLETIN NUMBER 5003

### Tone Telegraph System Model TTS-1-( )

The TMC Models TTS-1-( ) are completely transistorized telegraph and data transmission systems providing 4, 8, 12 or 16 individual send or receive teletypewriter channels at speeds up to 75 bauds (approximately 100 WPM), in either the National or CCITT International standard channel spacing.

All of these systems are non-diversity in operation and can be provided in standard 19" relay racks, or with individual shelves wired for installation into a customer's existing rack.

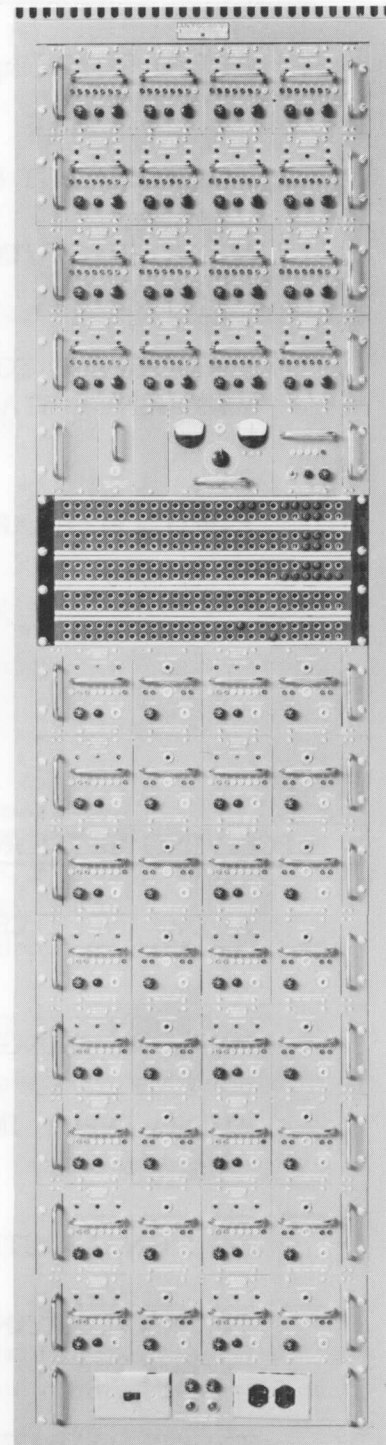
TMC Model TTS-1-( ) accepts teletypewriter or data signals, either polar or neutral, transforms these signals into audio frequency shifted tones, combines these tones and prepares them for transmission in the voice frequency band of a suitable medium such as a sideband transmitter. The receive terminal accepts the aggregate tones from a suitable receiver, separates the individual frequency shifted tones and transforms them into DC signals for keying the receive teletypewriter machines or data equipment.

The Model TTS-1-( ) features complete transistorization with protection against total system failure, by use of individual power supplies in the tone transmitters and receivers. Internal or external battery operation of the receive teleprinter loops is available on the receive side.

When the TTS-1-( ) are required as completely packaged systems, DC, Audio and primary power distribution panels are provided, as well as DC and Audio patching facilities.

Accessibility to all major test points and all adjustments in this system are accomplished from the front of the equipment.

For those applications of a non-diversity system, where station battery is available and front panel space requirements are a premium, TMC's Model TTS-2-( ), described in SSB 5004, will provide identical services.



PH-1512

TECHNICAL SPECIFICATIONS FOR TTS-1( )

TRANSMITTING SECTION

AUDIO OUTPUT:	Minus 10 dbm per channel. Aggregate tone level controlled by line attenuator.
AUDIO OUTPUT IMPEDANCE:	600 ohms, balanced.
MARK/SPACE TONE UNBALANCE:	1.5 db maximum.
MARK/SPACE TONE FREQUENCY STABILITY:	Plus or minus 3 cps for plus or minus 10% line voltage variation or plus or minus 25° C temperature variation from 25° C.
INPUT TELEGRAPH SIGNAL:	<ol style="list-style-type: none"><li>1. Neutral, positive or negative 60 ma or 1 ma.</li><li>2. Dry contact keying (1 ma keying current provided by 501A tone transmitter to the contacts).</li><li>3. Polar Keying direct or inverted 30 or 1 ma.</li><li>4. 50 micro-amp keying (with optional attachment).</li></ol>

RECEIVING SECTION

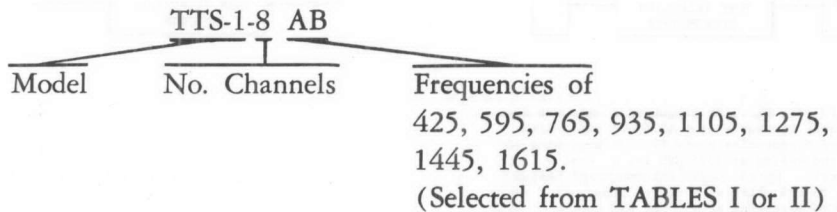
AUDIO INPUT LEVEL:	Nominal 0 to—10 dbm per channel. Minus 40 dbm min., plus 3 dbm maximum.
DYNAMIC RANGE:	40 db per individual channel signal.
AUDIO INPUT IMPEDANCE: (Aggregate tones)	600 ohms, balanced.
DC SIGNAL OUTPUT:	Neutral 65 ma, maximum into 2,000 ohm load.
INTERNAL KEYING IMPEDANCE:	50 ohm (approximately), floating.
TELEGRAPH BATTERY LOOP:	Internally provided. This battery can be disabled if operation with station battery is desired.
DC LOOP CURRENT ADJUSTMENT:	2.5K ohm, 25 watt potentiometer internally provided.

**OVER-ALL SYSTEM REQUIREMENTS:**

- POWER REQUIREMENTS:** 115/230 volts 50/60 cycles plus or minus 10%, 120 watts (less 509 keyers and convenience outlets) with 60 ma battery provided by the Model 509 keyers, power consumption increases by approximately 350 watts.
- OPERATING TEMPERATURE:** 0 to 50° C.
- STORAGE TEMPERATURE:** -15 to +65° C.
- PHYSICAL DIMENSIONS:** 1 Equipment cabinet 84" high, 24" deep, 22" wide. (TTS-1-16)
- INSTALLED WEIGHT:** Approximately 500 lbs.
- SHIPPING WEIGHT:** (approx.) TTS-1-16 800 lbs. 56.8 cu. ft.  
TTS-1-8 750 lbs. 50.0 cu. ft.

**ORDERING INFORMATION**

When ordering TMC Models TTS, the selected system configuration, number of channel frequencies are indicated as shown in the following example:



**STANDARD FREQUENCY DETERMINING NETWORKS**

75 baud (100 WPM) channel frequencies for those applications where less than the total available frequencies are utilized, are grouped as follows:

**TABLE I  
NATIONAL STANDARD**

GROUP I	GROUP II
170 cps channel spacing $\pm$ 42.5 cps shift for 75 baud* (100 WPM) operation.	340 cps channel spacing $\pm$ 85 cps shift for 150 baud (200 WPM) operation.
<ul style="list-style-type: none"> <li>A. 425, 595, 765, 935</li> <li>B. 1105, 1275, 1445, 1615</li> <li>C. 1785, 1955, 2125, 2295</li> <li>D. 2465, 2635, 2805, 2975</li> <li>E. 3145, 3315</li> </ul>	<ul style="list-style-type: none"> <li>F. 595, 935, 1275, 1615</li> <li>G. 1955, 2295, 2635, 2975</li> </ul>

**TABLE II**  
**INTERNATIONAL STANDARD**

**GROUP III**

120 cps channel spacing  $\pm$  35 cps shift  
for 75 baud\* (100 WPM) operation.

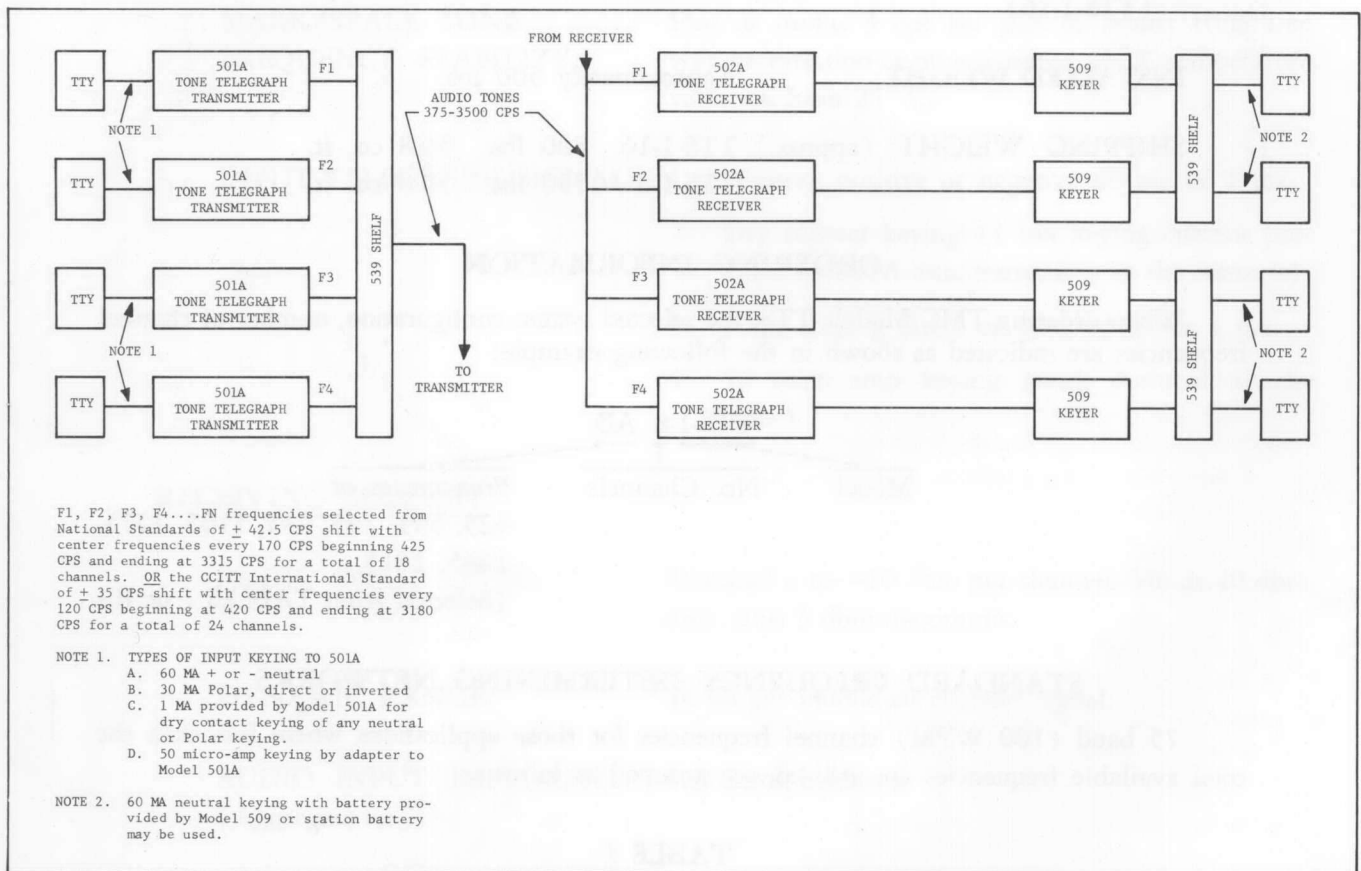
- M. 420, 540, 660, 780
- N. 900, 1020, 1140, 1260
- O. 1380, 1500, 1620, 1740
- P. 1860, 1980, 2100, 2220
- Q. 2340, 2460, 2580, 2700
- R. 2820, 2940, 3060, 3180

**GROUP IV**

240 cps channel spacing  $\pm$  70 cps shift  
for 150 baud (200 WPM) operation.

- S. 540, 780, 1020, 1260
- T. 1500, 1740, 1980, 2200
- U. 2460, 2700, 2940, 3180

\*100 baud operation can be provided at a slight increase in cost.



**TTS-1 BLOCK DIAGRAM**

Designed and manufactured for the  
**TECHNICAL MATERIEL CORPORATION** by the Tele-Signal Corporation

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MAMARONECK, NEW YORK

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